BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking on the Commission's own motion to improve distribution level interconnection rules and regulations for certain classes of electric generators and electric storage resources.	Rulemaking 11-09-011 (September 22, 2011)

COMMENTS OF ENPHASE ENERGY, INC. ON THE DRAFT PHASE 2 RECOMMENDATIONS OF THE SMART INVERTER WORKING GROUP

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Pursuant to the "Draft Recommendations for Utility Communications with Distributed Energy Resources (DER) Systems with Smart Inverters" from the Smart Inverter Working Group, served on November 6, 2014, Enphase Energy, Inc. (Enphase) respectfully submits these comments.

1. Editorial Comments on the Document

A. Clarify Figure 2 and make it more consistent with Figure 3

In Figure 2, the text in the rightmost column, "For interactions with utilities," seems to belong in column 3. It should be replaced with "Not included" as for the rows below, since the actual gateway/translator will not be specified in Rule 21.

Also, the lower part of the "stack" in column 1 is not very clear, compared with the three configurations shown in Figure 3. Perhaps the bottom of column 1 should be a gray block to indicate freedom of implementation in the Aggregator or DER system below the common protocol.

2. Substantive Comments on the Recommendations

A. Rule 21 Should Not Mandate Direct Connections to Small DER

The equipment and operations/maintenance cost burden of communication capabilities is largest for small systems. The proposed use of SEP2 further adds the administrative cost of

maintaining an Internet-reachable server for utility-initiated connections. On the other hand, aggregators of small systems often have two-way communications capabilities already in place even for small systems, and the aggregator's scale means that it is relatively cheap to provide and maintain a public SEP2 endpoint (in the "cloud"). Rule 21 should allow small DER to connect to utilities via an aggregator's network; in other words, it should not mandate a direct utility-DER link for such DER systems.

B. Rule 21 Should Minimize Invention of Protocols, but SEP2 Requires Some

Because SIWG has proposed a short timeframe to develop phase 2 recommendations, it should not (indeed cannot realistically) engage in significant protocol invention or augmentation. The shortcomings of SEP2, especially with respect to aggregated DER systems, require careful selection and "stitching" of a proven architecture for hierarchical management to what is a simple client-server protocol. Some areas of concern:

- Group definition and maintenance
- Discovery and registration of DER systems
- Aggregation of success/failure acknowledgement
- Asynchronous notifications from DER systems

It is better to relax the timeline than to rush to cobble together protocols that will not satisfy the requirements of the three connectivity scenarios.

C. Rule 21 Needs Realistic Performance Requirements for Aggregated DER

In section 5.3, the performance requirements for aggregators of DER systems is given as 10s of seconds. This is not reasonable, given the possibility of grouped operations over tens to thousands of DERs. Nor does it accord with the "minutes" given verbally at the October 27th

workshop. The requirement should be relaxed to “minutes” and should also indicate that response time may have to scale with group size for grouped operations.

3. Conclusion

Enphase appreciates the opportunity to provide these comments. We look forward to continuing to work with the Smart Inverter Working Group to develop effective standards for advanced inverter functionality.

DATED at Petaluma, California, this 10th day of November, 2014

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